

## ABSTRACT

An internal combustion engine (1) generates power by burning a mixture of fuel and air in each combustion chamber (3). The internal combustion engine (1) is provided with an in-cylinder pressure sensor (15) disposed in the combustion chamber (3) and an ECU (20). The ECU (20) calculates control parameters each of which is a product of an in-cylinder pressure detected by the in-cylinder pressure sensor (15) and a value obtained by exponentiating an in-cylinder volume at timing of detecting the in-cylinder pressure with a predetermined index at two predetermined points during a period from opening timing of an intake valve ( $V_i$ ) to closing timing thereof, and calculates a quantity of air aspirated into each combustion chamber (3) based upon a difference in the control parameter between the two predetermined points.